User Manual

Manual number:
PTI-06-07/02/08/A

Retail scales (RS232 version)

- WTC 6/S, WTC 15/S, WTC 30/S
- WTC 6/SW, WTC 15/SW, WTC 30/SW

MANUFACTURER OF ELECTRONIC WEIGHING INSTRUMENTS

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1. APPLICATION

Retail scale WTC type is a perfect weighing device for application in small and standard trade. power supply by inbuilt batteries allows for application on location, with no access to power supply, like market place. Scale is equipped with three backlit LCD displays enabling readout of result by person standing in front of it. Scales have plastic casing and stainless steel pan. Scale is equipped with communication port RS232, which enables cooperation with cash register (option), printer or computer.

Scales functions:

- Backlight of display
- Level of filtration
- Digital filter
- Autozero function
- Setting baud rate of transmission
- Continuous data transmission for RS 232
- Switch on/off beep signal
- Tarring in full measuring range
- Memory of 100 unit prices of goods (PLU)
- Quick access to 9 prices assigned to goods (PLU) by means of quick access keys
- Cooperation with cash register, printer or computer

Notice:
Calibration procedure is inaccessible for user. User can not change main settings of retail scales designed for trade settlement!

2. PRECAUTIONS

A. Please, read carefully this user manual before and use the device according to its intended use;

B. Device should be operated in dust- and vibration- free environment;

C. Weighed loads should be placed in possibly central part of scale pan;

D. Do not clean the device with agents causing corrosion;

E. Weighing pan should be loaded with goods having gross mass lower than maximal capacity of the scale;

F. Do not leave for longer period of time higher loads on the pan;

G. In case of failure, immediately disconnect scale power supply;

H. Devices that are to be withdrawn from usage should be utilized according to the law.

I. On finish of working day, turn off the scale with switch . additionally, for safety and power saving purposes, unplug the scale from **A/C** mains.

J. Dead batteries (accumulators) should be utilized according to the law;

3. WARRANTY CONDITIONS

A. RADWAG is obliged to repair or change those elements that appears to be faulty because of production and construction reason,

B. Defining defects of unclear origin and outlining methods of elimination can be settled only in participation of a user and the manufacturer representatives,

C. RADWAG does not take any responsibility connected with destructions or losses derives from non-authorized or inappropriate (not adequate to manuals) production or service procedures,

D. Warranty does not cover:

- Mechanical failures caused by inappropriate maintenance of the device or failures of thermal or chemical origin or caused by atmospheric discharge, over voltage in mains or other random event,
- Inappropriate cleaning.

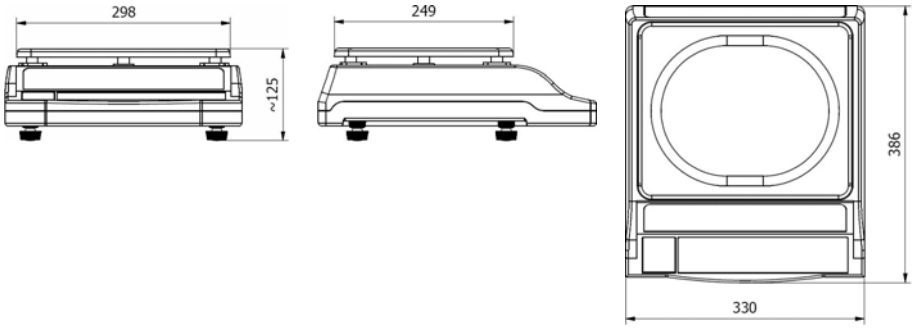
E. Loss of warranty appears after:

- Access by an unauthorized service,
- Intrusion into mechanical or electronic construction of unauthorized people,
- Removing or destroying protection stickers.

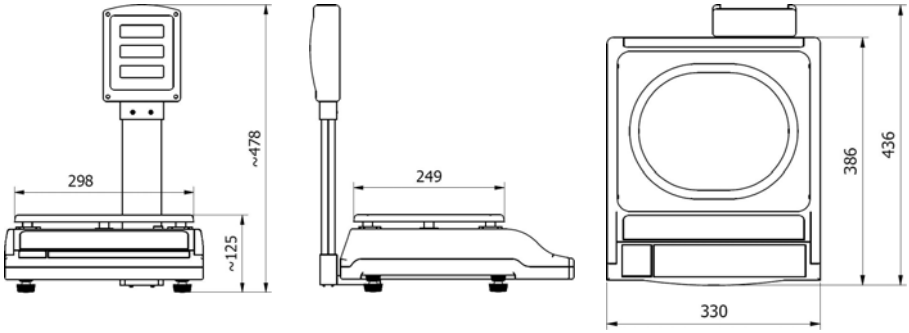
F. The detailed warranty conditions one can find in warranty certificate.

G. Contact with the central authorized service: +48 48 384 88 00 ext. 114.

4. DIMENSIONS



Dimensions of scales in WTC/S series

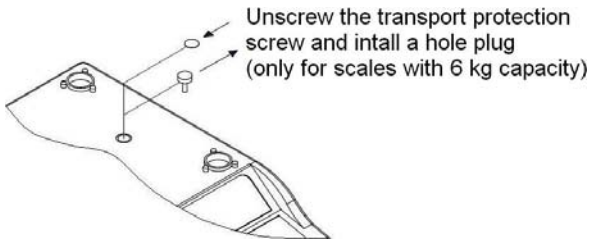


Dimensions of scales in WTC/SW series

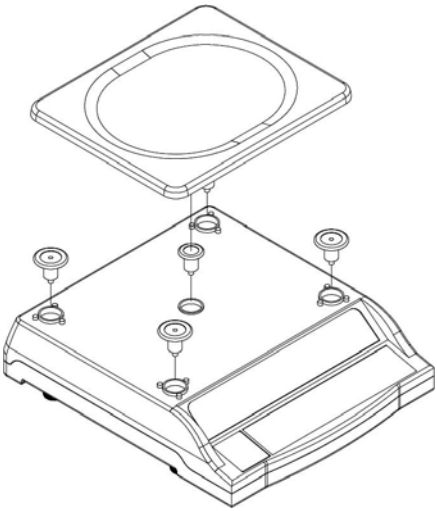
5. SCALES ASSEMBLY

Remove the scale from factory packaging and place the scale on flat and hard surface far from heat sources and next:

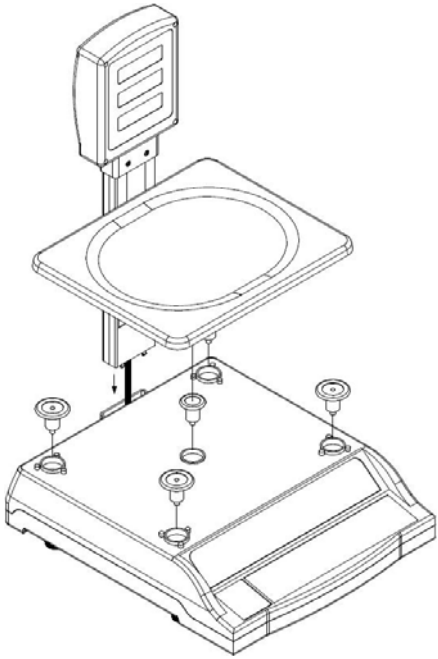
- Pull out the transport protections (applies only to scales with max. capacity 6kg):



- Install the pan and the pillar (WTC/SW scales) according to below drawing:



Assembly of scales WTC/S series



Assembly of scales WTC/SW series

Caution:

1. *During assembly of the pillar in the WTC/SW scale put attention not to "cut" display tape.*
2. *Before starting the weighing remove (tear off) foil protecting scale pan.*

6. STARTING AND OPERATION

- After assembly (see point 5 of manual) place the scale on flat and hard surface far from heat sources.
- Scale should be levelled by turning regulation feet. Levelling is correct if air bubble is in central position of level indicator placed in upper (left) part of scale casing:

level - OK

level incorrect

- Turn on the supply with switch ⏻,
- After turning on the supply, wait until scale test is finished,
- When scale test is finished in display window **<WEIGHT kg>** **mass indication equal to zero** will be indicated and symbols ▼will be displayed above marks:

  ZERO - indication precise zero
  STA - weighing result is stable
  AC - scale power supply from external A/C adaptor

- If weighing result is other than zero – press zeroing key.

7. SUPPLY

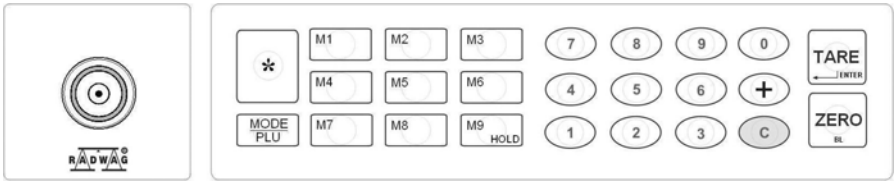
Retail scales WTC series use two power supply sources. Scale casing has **A/C** adaptor socket and switch ⏻ placed in lower (right) part of casing. Socket is used only for connection of external **A/C** adaptor provided with scale.

Scale is equipped with accumulator 6V/4.5Ah. Max operation time of accumulator when accumulator with accumulator fully charged is 60 hours (without backlight)and around 24 hours with LED backlight on.

Scale software automatically checks state of accumulator charging. At high high accumulator discharging symbol ▼is displayed above **BAT** mark in display window **<WEIGHT kg>**. After about 30s display windows **<UNIT PRICE €/kg>** and **<TOTAL PRICE €>** are switched off and in display window **<WEIGHT kg>** message is indicated **<Bat-LO>**.

Connect to scale **A/C** adaptor to recharge accumulator and restart the device with switch .

8. SCALE KEYBOARD



9. SCALE DISPLAY

Display of scales series WTC/S

Display of scales series WTC/SW

Notice:
Because functionality and use of both display types is identical, further part of instruction will be based on display of scales series WTC/S.

10. KEYS FUNCTIONS

Enter to recalling unit price
Enter to saving unit price

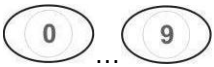
Zeroing of scale

Tarring of scale or confirmation of current operation

Sending the weighing result to printer or computer

Direct access to unit prices

Cancellation of unit price
Cancellation of goods number



Inserting unit price,
Inserting goods number during recalling unit price from base

Inactive

***Caution**:*

After simultaneous pressing keys *and* *functions of particular keys will be changed for the period of function programming. Their usage is described in further part of manual.*

11. INSCRIPTIONS ON DISPLAY

No.	Message	Description
1.	**Fil**	Filter level
2.	**Fnnd**	Median filter
3.	**Auto**	Autozero function
4.	**Prnt**	Printout type
5.	**bAud**	Transmission baud rate
6.	**bL**	Display backlight
7.	**bEEP**	Beep signal
8.	**Edit -**	Mode of user parameters edition
9.	**PLU**	Goods number in goods base
10.	**bAt-LO**	Discharged accumulator or damaged scale adaptor

12. USER MENU

12.1. List of scale menu groups

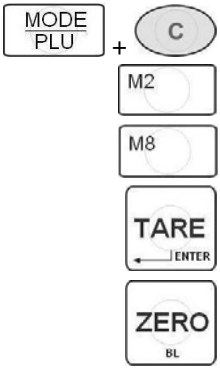
Menu is divided into **3** basic groups. Each group has individual name starting from capital letter **P**. Groups names and their contents is shown below:

P1	**rEAd**		
	P 1.0.	Fil	2
	P 1.1.	Fnnd	OFF
	P 1.2.	Auto	On
P2	**Prnt**		
	P2.0.	Prn	StAb
	P2.1.	bAud	9600
P3	**othr**		
	P3.0.	bL	Auto
	P3.1.	bEEP	YES

12.2. Moving in user menu

User moves in menu by means of scale keyboard.

12.2.1. Scale keyboard



Enter to main menu

Scrolling upwards the menu,
Change of active parameter value

Scrolling downwards the menu,
Change of active parameter value

Enter to chosen submenu,
Enter to parameter edition mode,
Change confirmation,

Leave function without changes,
Exit to one level higher in menu,

12.2.2. Return to weighing function

Inserted changes in scale memory will be saved after return to weighing with procedure of saving changes.

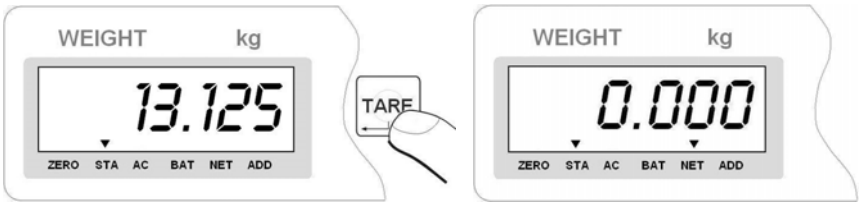
Press several times key ZERO until display indicates message **<SAuE?>**. When question is indicated press : TARE – to confirm changes or ZERO to resign from inserted changes. After pressing appropriate key, scale will return to weighing.

13. WEIGHING

Place on the pan weighed load. When symbol ▼ is indicated above **STA** mark in display window **<WEIGHT kg>**, weighing result can be read:

13.1. Scale tarring

To determine net mass put load packaging and when indication is stable press key TARE (mass indication will return to zero, in display window **<WEIGHT kg>** symbol ▼ will be indicated above mark **NET**:



After placing the load, scale display will indicate net mass. Tarring can be done many times in full measuring range of scale.

While using the tare function, pay attention not to exceed max measuring range of scale. After removing load and packaging indication equal to sum of tarred masses with minus sign will be displayed.

Notice:
Tarring process can not be carried out when there is negative mass value or zero mass value on scale display. In such case display window ***< WEIGHT kg>*** *will indicate message* ***<Err3>****.*

13.2. Scale zeroing

In order to zero mass indication press key ZERO. In display window **<WEIGHT kg>** symbols ▼ will be indicated above **ZERO** and **STA**.

Zeroing is the same as setting new zero point, which is treated by the scale as precise zero. Zeroing is possible only when display state is stable.

Notice:
Zeroing display state is possible only in range up to ***±2%*** *of scale max capacity. If zeroed value will be higher than* ***±2%*** *of max capacity, display window* ***<WEIGHT kg>*** *will indicate message* ***<Err2>****.*

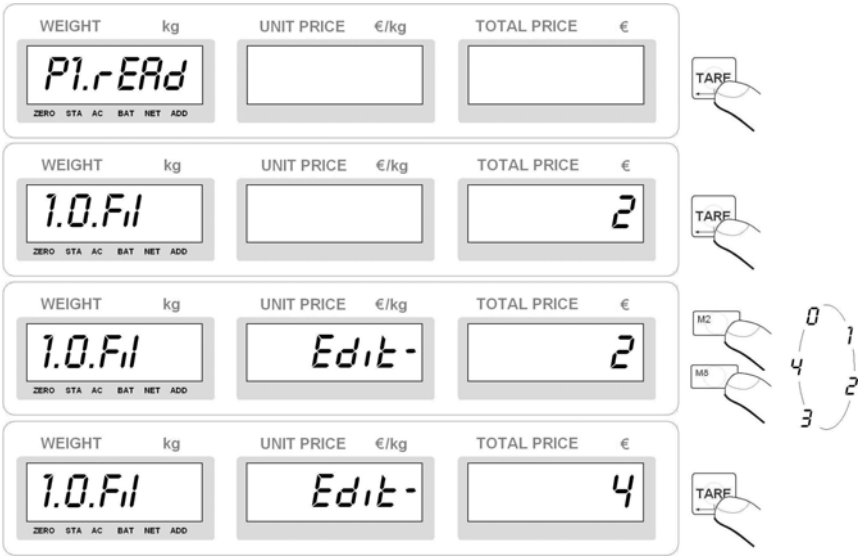
14. MAIN PARAMETERS

User can adjust scale to external environmental conditions (filer level) or to his own needs (autozero function). These parameters are in group **<P1. rEAd>**.These functions will help the user to adjust the scale to environment al conditions in which scale operates.

14.1. Setting the filter level

Procedure:

- Enter to submenu **<P1. rEAd>** according to point 12.2 of manual, and next:



0 - 4 - filter level depending on environment al conditions

Return to weighing:

See – point 12.2.2. – return to weighing.

Notice:

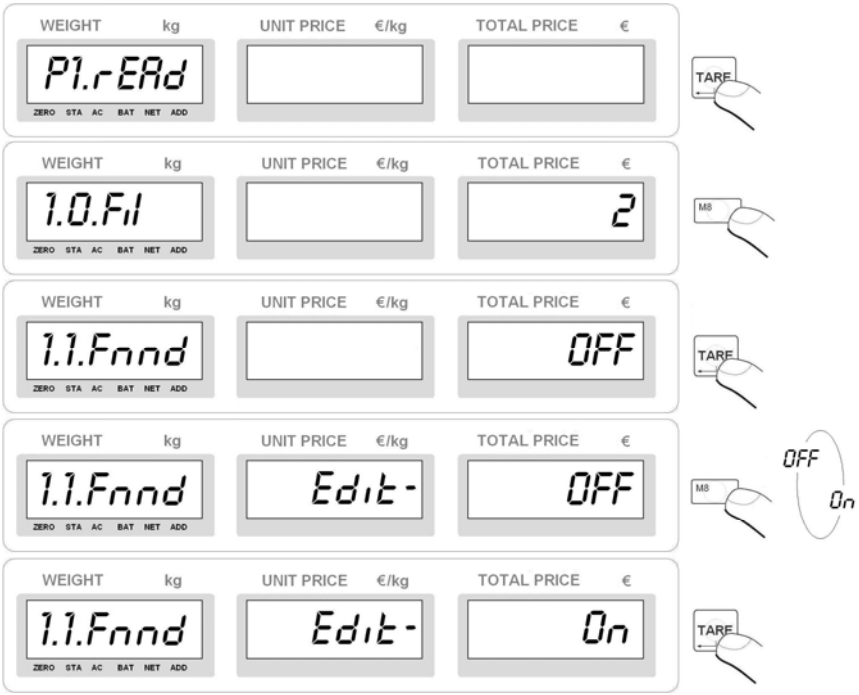
The higher filter level the longer time of weighing result stabilisation.

14.2. Median filter

Median filter is applied for eliminating short impulse disturbances (e.g. mechanical shocks).

Procedure:

- Enter to submenu **<P1. rEAd>** according to point 12.2 of manual, and next:



Fnnd OFF - median filter operation on
Fnnd On - median filter operation off

Return to weighing:

See – point 12.2.2. – return to weighing.

14.3. Autozero function

„AUTOZERO" function was introduced to ensure precise indications. This function was applied to control automatically and to correct zero indication of scale.

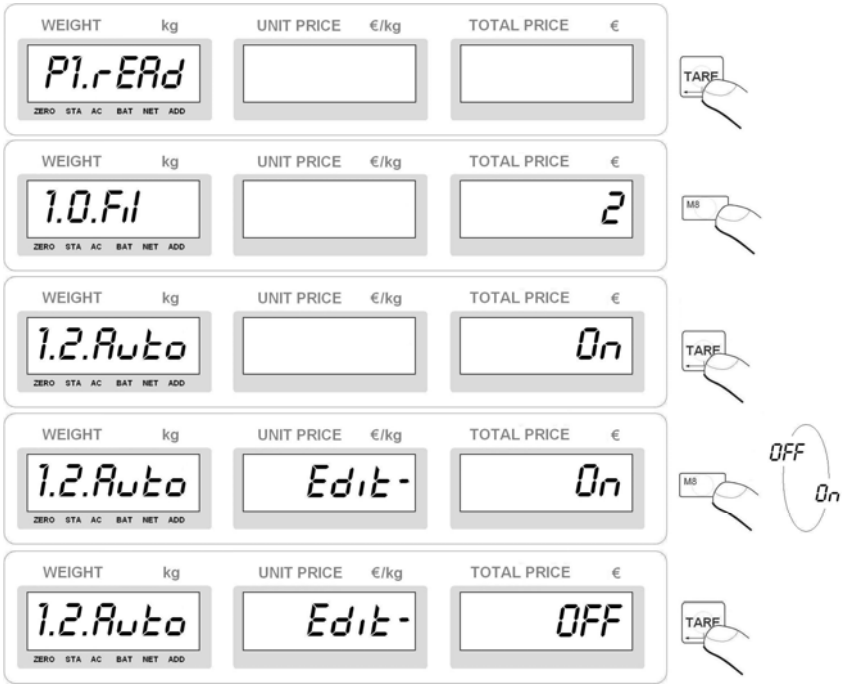
When function is active, consecutive results are compared in fixe periods of time. If these results differ less than declared range of AUTOZERO e.g. 1 division, scale will automatically go to zero and in display window **< WEIGHT kg>** symbols ▼will be indicated above **ZERO** and **STA**.

When AUTOZERO function is on , each measurement starts from precise zero. There are some special cases when this function interrupts in measurements.

Example of that can be very slow loading of pan (e.g. load pouring), in such case correction of zero indication can also correct indication of real load mass.

Procedure:

- Enter to submenu **<P1. rEAd>** according to point 12.2 of manual, and next:



AUTO **no** - autozero off
AUTO **YES** - autozero on

Return to weighing:

See – point 12.2.2. – return to weighing.

15. SETTING PARAMETERS OF RS 232

Peripheral device connected to RS 232C socket has to powered from the same mains, with common antishock protection, in such a way that different potentials must not appear on zero wires of the scale and the peripheral device.

Transmission parameters programmed in scale:

- Transmission baud rate - from 1200 to 57600 bit/s
- Data bits - 8
- Stop bit - 1
- Parity control - none

Value indicated by scale display can be sent through port in series to peripheral device in one of three ways:

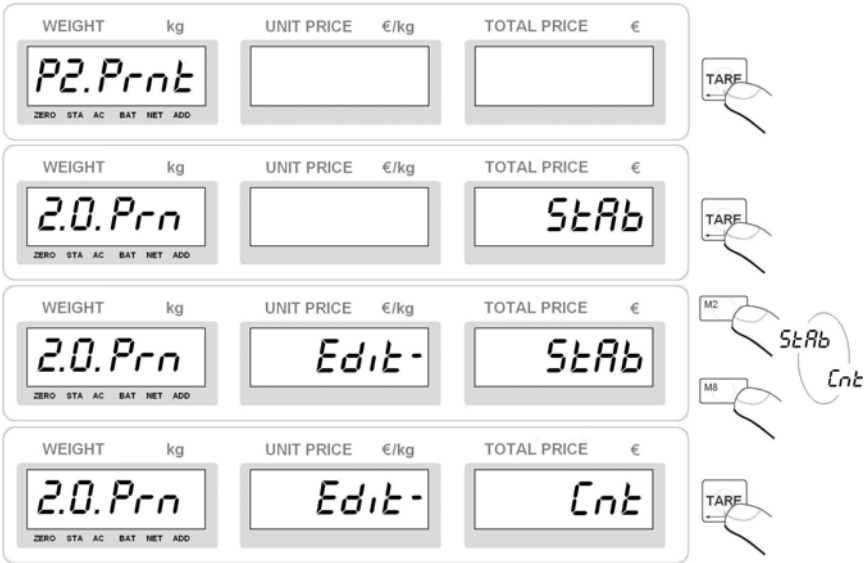
- **Manual** – after pressing key (+),
- **In continuous way** – after function activation or after sending control command,
- **On request from peripheral device** – see point 21.2. of manual.

15.1. Printout type

Parameter enables to choose printout type.

Procedure:

- Enter to submenu **<P2. Prnt>** according to point 12.2 of manual, and next:



Prn StAb - Printout of stable weighing results
Prn Cnt - Continuous transmission

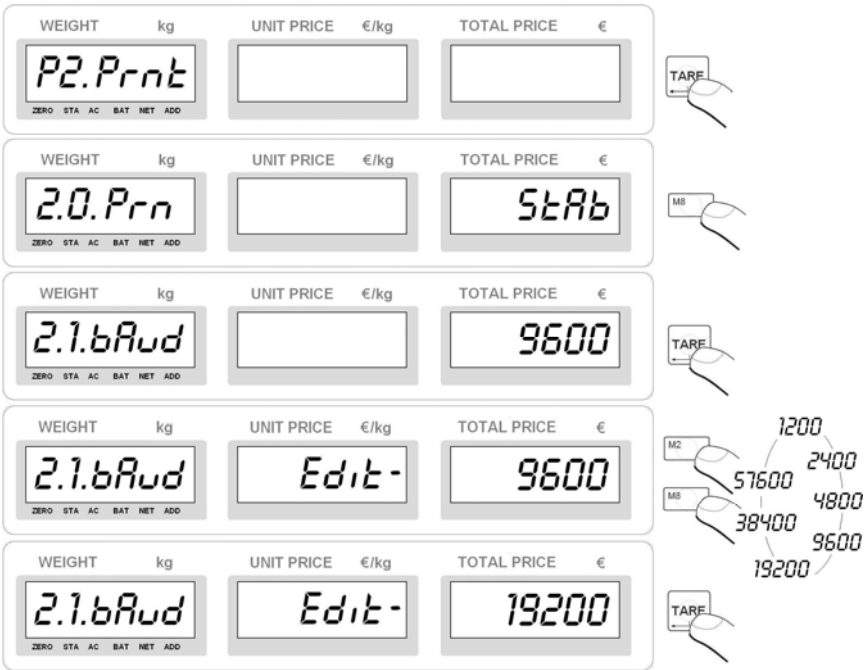
Return to weighing:

See – point 12.2.2. – return to weighing.

15.2. Transmission baud rate

Procedure:

- Enter to submenu **<P2. Prnt>** according to point 12.2 of manual, and next:



Return to weighing:

See – point 12.2.2. – return to weighing.

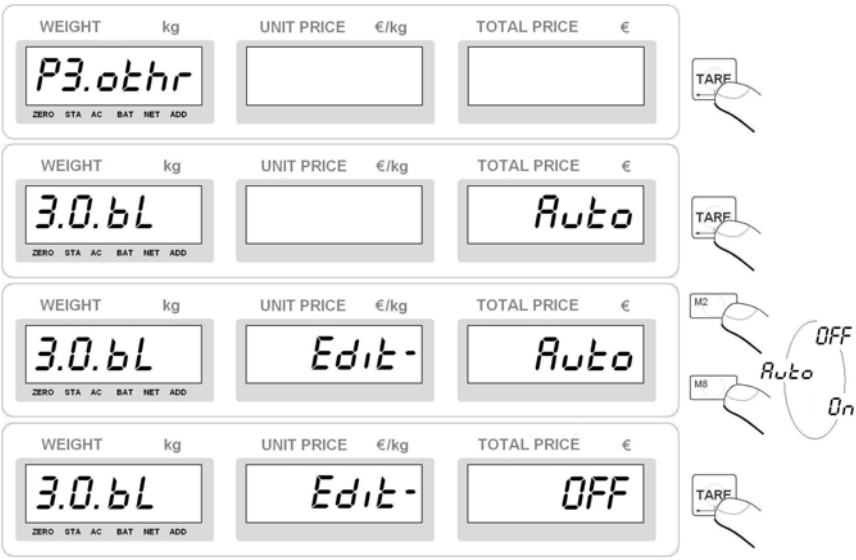
16. OTHER PARAMETERS

User can set parameters which have influence on operation of scale, e.g. backlight, „beep" signal. These parameters are in group **<P3. othr>**.

16.1. Backlight function

Procedure:

- Enter to submenu **<P3. othr>** according to point 12.2 of manual, and next:



bL OFF - backlight off
bL On - backlight on
bL Auto - backlight switches off automatically when indication doesn't change in about 10s

Return to weighing:

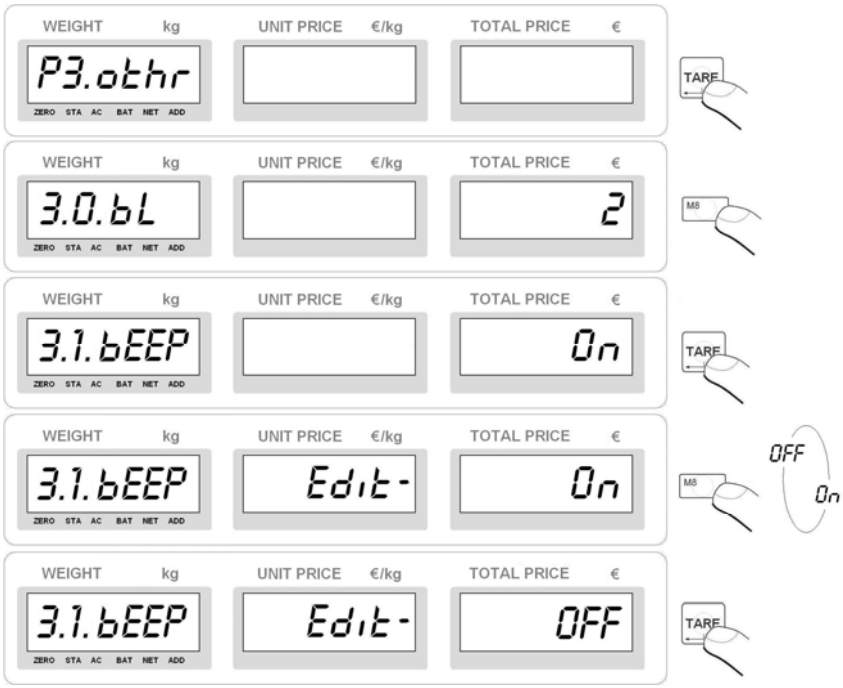
See – point 12.2.2. – return to weighing.

Notice:
*For setting **bL=Auto**, when result doesn't change in about 10s, backlight will be switched off. Backlight is switched on automatically when indication on the display changes.*

16.2. "Beep" signal – reaction on key pressing

Procedure:

- Enter to submenu **<P3. othr>** according to point 12.2 of manual, and next:



bEEP OFF - beep signal off
bEEP On - beep signal on

Return to weighing:
See – point 12.2.2. – return to weighing.

17. FUNCTIONS OF COMPUTING SCALES

User of retail scales series WTC has possibility of using following computing functions:

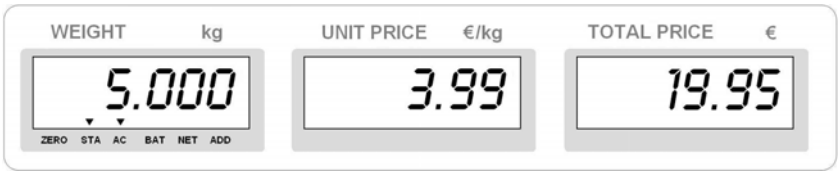
- Direct inserting of unit prices,
- Cancellation of unit prices,
- Saving unit prices in scale memory,
- Recalling of saved unit prices from scale memory,

17.1. Inserting and cancellation of unit price

User has possibility of direct unit prices inserting using digital keys from 0 to 9. Scale software inserts price in middle display window **<UNIT PRICE €/kg>**.

Procedure:

After loading the pan with goods scale software will automatically indicate the charge in **<€>** in display window **<TOTAL PRICE €>** calculated on the basis of:



To cancel unit price press key C.

After inserting price wait about 5s, now it is possible to insert new price without cancellation of previous on with key C.

17.2. Saving unit price

Software enables to save 100 unit prices in scale memory.

Procedure:

A. While in weighing mode insert required unit price according to point 17.1 of manual,

B. Press key MODE PLU, in display **< TOTAL PRICE €>** following message will be indicated:

C. By means of digital keys from 0 to 9 enter goods number **PLU** (from 00 to 99) which will stand for previously inserted unit price,

D. Enter key MODE PLU, in display window **<WEIGHT kg>** following message will be indicated:

E. To save unit price previously assigned to inserted goods number press TARE scale software will automatically return to weighing mode,

F. Saving procedure of remaining unit prices to scale memory is analogous to procedure described above.

17.3. Recalling of saved unit price

User has possibility to recall unit price from data base by choice of goods number **PLU**, to which unit price is assigned.

Procedure:

- While in weighing mode press key [MODE PLU], in display window **< TOTAL PRICE €>** following message will be indicated:

- By means of digital keys from [0] to [9] insert goods number **PLU** to which required unit price is assigned,
- Confirm inserted goods number with key [TARE ENTER],
- Scale software will return to weighing mode and in display window **<UNIT PRICE €/kg>** required unit price will be recalled.

It is also possible to use quick access keys for nine unit prices – keys from [M1] to [M9 HOLD], to which goods prices from 1 to 9 stand for.

Procedure:

- Press buick access key – keys from [M1] to [M9 HOLD], unit price assigned to goods will be recalled in display window **<UNIT PRICE €/kg >**.

18. COOPERATION WITH PRINTER

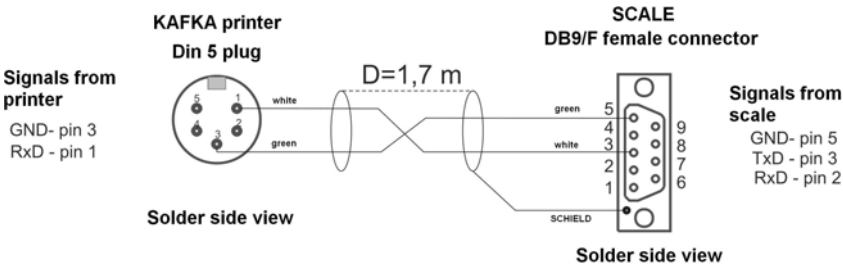
Signal with current display state is sent each time key + is pressed.
Scale can cooperate with one of thermal printer series **KAFKA**:

a) KAFKA
Only weighing results with mass units are possible to be printed.

b) KAFKA 1/Z
Printer has internal real time clock. Both date and time are printed after connecting printer to mains.

c) KAFKA SQ S
Printer equipped with real time clock and possibility of statistics records from measurements. Statistics contain: samples quantity, masses sum of all samples, average value, standard deviation, variance factor, min value, max value, difference max – min

Cable scheme:



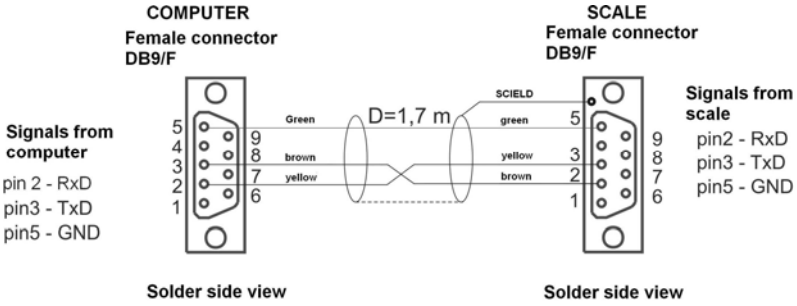
Cable scheme: scale –Kafka printer

19. COOPERATION WITH COMPUTER

Sending weighing results to computer can be carried out:

- manually	- after pressing key +
- in continuous way	- after function activation or after sending controlling command
- on request from computer	- after sending controlling command

Cable scheme:



Cable scheme: scale –computer

20. COOPERATION WITH CASH REGISTERS

Retail scales series WTC cooperate with most of cash registers accessible on market.

List of exemplary cash register models cooperating with retail scales type WTC:

SHARP ER-A227P,
SHARP ER-A277P,
SHARP ER-A277PS,
SHARP ER-A457P,
SHARP ER-A457PF
SHARP ER-A275P,
SHARP ER-A445P,
SHARP ER-A455P,
EURO,
EURO ALFA,
Mercury 130F

21. COMMUNICATION PROTOCOL

21.1. General information

A. A character protocol scale-terminal has been designed for communication between RADWAG scales and peripheral devices via RS-232 interface.
B. It consists of commands sent from an peripheral device to the scale and a responses from a scale.
C. Responses are sent every time after receiving a command (reaction for any command).
D. Using commands allows users to receive some information about the state of scale and/or influence the operation e.g.: requesting weighing results, display control, etc.

21.2. Set of commands operated by indicator

Command	Description of command
Z	Zeroing
T	Tarring
S	Send the stable result in basic unit
SI	Send the result immediately in basic unit
C1	Switch on continuous transmission in basic unit
C0	Switch off continuous transmission in basic unit

Notice:

1. *Each command must be must be finished with CR LF.*
2. *Sending to scale next commands without wait for response it should be expected that scale can lose some of them. The best solution is to send consecutive commands after receiving reply to previous commands.*

21.3. Response message format

After sending a request message you can receive:

XX_A CR LF	command accepted and in progress
XX_D CR LF	command completed (appears only after XX_A)
XX_I CR LF	command comprehended but currently not accessible
^ CR LF	command comprehended but max range was exceeded
v CR LF	command comprehended but min range was exceeded
ES_CR LF	command not comprehended
XX _ E CR LF	error while executing command – time limit for stable result exceeded (limit time is a descriptive parameter of the scale)

XX - command name
_ - space

21.4. Commands description

21.4.1. Scale zeroing

Syntax: **Z CR LF**

Possible responses:

Z_A CR LF - command accepted and in progress
Z_D CR LF - command completed

Z_A CR LF - command accepted and in progress
Z_^ CR LF - command comprehended but zero range exceeded

Z_A CR LF - command accepted and in progress
Z_E CR LF - time limit for stable result exceeded

Z_I CR LF - command comprehended but currently not accessible

21.4.2. Scale tarring

Syntax: **T CR LF**

Possible responses:

T_A CR LF - command accepted and in progress
T_D CR LF - command completed

T_A CR LF - command accepted and in progress
T_v CR LF - command comprehended but tare range exceeded

T_A CR LF - command accepted and in progress
T_E CR LF - time limit for stable result exceeded

T_I CR LF - command comprehended but currently not accessible

21.4.3. Give stable displays state

Syntax: **S CR LF**

Possible responses:

S_A CR LF - command accepted and in progress
S_E CR LF - time limit for stable result exceeded

S_I CR LF - command comprehended but currently not accessible

S_A CR LF - command accepted and in progress
RAMKA - stable displays state is received

Frame format:

1	2-4	5	6-14	15	16-21	22	23-30	31	32
S	space	mark	mass	space	price	space	charge	CR	LF

Example:

S CR LF – computer command
S _ A CR LF - command accepted and in progress
S _ _ _ _ _ _ _ 2 5 . 0 0 0 _ _ 1 5 . 9 9 _ 2 5 9 9 9 . 7 4 CR LF
- stable display state is received

21.4.4. Give displays state immediately

Syntax: **SI CR LF**

Possible responses:

SI_I CR LF - command comprehended but currently not accessible

SI_A CR LF - command accepted and in progress
RAMKA - stable displays state is received immediately

Frame format:

1	2	3	4	5	6-14	15	16-21	22	23-30	31	32
S	I	space	Stability mark	mark	mass	space	price	space	charge	CR	LF

Example:

S I CR LF – computer command
S I _ ? _ _ _ _ 2 5 . 0 0 0 _ _ 1 5 . 9 9 _ 2 5 9 9 9 . 7 4 CR LF
- stable display state is received immediately

21.4.5. Switch on continuous transmission

Syntax: **C1 CR LF**

Possible responses:

C1_I CR LF - command comprehended but currently not accessible
C1_A CR LF - command accepted and in progress
RAMKA - display state is received

Frame format:

1	2	3-11	12	13-18	19	20-27	28	29
space	mark	mass	space	price	space	charge	CR	LF

21.4.6. Switch off continuous transmission

Syntax: **C0 CR LF**

Possible responses:

C0_I CR LF - command comprehended but currently not accessible
C0_A CR LF - command comprehended and completed

21.5. Manual printout

User can generate printouts from scale manually when indication is stable after pressing key .

Printout format

1	2	3-11	12	13-18	19	20-27	28	29
stability mark	mark	mass	space	price	space	charge	CR	LF

Stability mark	[space] if result is stable [?] if result is unstable
Mark	[space] for positive values [-] for negative values
Mass	9 marks with point equalized to the right
Price	6 marks equalized to the right
Charge	8 marks equalized to the right

Example 1:

_ _ _ _ _ 2 5 . 0 0 0 _ 9 9 9 . 9 9 _ 2 4 9 9 9 . 7 4 CR LF

- printout generated after pressing key .

Example 2:

? _ _ _ _ 3 2 . 1 1 0 _ _ 3 8 . 5 5 _ _ 1 2 3 7 . 8 4 CR LF

- printout generated after pressing key .

Example 3:

? - _ _ _ 1 8 . 2 7 5 _ _ 1 5 . 0 0 _ _ _ _ _ 0 . 0 0 CR LF

- printout generated after pressing key .

Notice:
If during manual print occurs an error of exceeding weighing range on ***[+]****, scale will generate frame:* ***^ CR LF****. However if during manual print occurs an error of exceeding weighing range on* ***[-]****, scale will generate frame:* ***v CR LF****.*

21.6. Continuous transmission

Indicator has possibility of mass printout in continuous transmission. Transmission mode can be switched on with command through RS232 port (see point 21.4 of manual) or by parameter setting (see point 15.1 of manual).

Frame format for continuous transmission:

1	2	3-11	12	13-18	19	20-27	28	29
stability mark	mark	mass	space	price	space	charge	CR	LF

Stability mark [space] if result is stable
[?] if result is unstable
Mark [space] for positive values
[-] for negative values
Mass 9 marks with point equalized to the right
Price 6 marks equalized to the right
Charge 8 marks equalized to the right

Example 1:

_ _ _ _ _ 2 5 . 0 0 0 _ 9 9 9 . 9 9 _ 2 4 9 9 9 . 7 4 CR LF
- continuous printout generated from scale.

Example 2:

? _ _ _ _ 3 2 . 1 1 0 _ _ 3 8 . 5 5 _ _ 1 2 3 7 . 8 4 CR LF
- continuous printout generated from scale.

Example 3:

? - _ _ _ 1 8 . 2 7 5 _ _ 1 5 . 0 0 _ _ _ _ _ 0 . 0 0 CR LF
- continuous printout generated from scale.

Notice:
*If during manual print occurs an error of exceeding weighing range on **[+]**, scale will generate frame: **^ CR LF**. However if during manual print occurs an error of exceeding weighing range on **[-]**, scale will generate frame: **v CR LF**.*

22. ERROR MESSAGES

Err2 - Value beyond zero range

Err3 - Value beyond tare range

Err8 - Exceeded time of tar ring/zeroing operation

null - Transducer zero value

FULL2 - Measurement range exceeding

LH - Start mass error, indication beyond ±10% range of start mass

23. TECHNICAL PARAMETERS

Scale type:	**WTC 6/S** **WTC 6/SW**	**WTC 15/S** **WTC 15/SW**	**WTC 30/S** **WTC 30/SW**
Max capacity	6 kg	15 kg	30 kg
Readability	2 g	5 g	10 g
Tare range	-6 kg	-15 kg	-30 kg
Pan size	250×300 mm		
Working temperature	+5°C ÷ +35°C		
Power supply	230V AC / 9V DC and internal adaptor 6V, 4,5Ah		
Display	LCD × 3 pcs		
Interface	RS232		

MANUFACTURER

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